

# MONTHLY NOTICES

OF THE

## ROYAL ASTRONOMICAL SOCIETY.

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Professor G. H. DARWIN, M.A., LL.D., President, in the Chair.

Rev. Edward Lyon Berthon, M.A., St. Margaret's, Cupernham, Romsey, Hants ; and

Rev. Theodore Evelyn Reece Philips, M.A., Handford Vicarage, Yeovil, Somerset,

were balloted for and duly elected Fellows of the Society.

The following candidates were proposed for election as Fellows of the Society, the names of the proposers from personal knowledge being appended :—

Rev. Thomas Gerrard Barber, B.A., 10 Highfield Road, Doncaster (proposed by J. W. L. Glaisher) ; and

Sydney Samuel Hough, B.A., Chief Assistant, Royal Observatory, Cape of Good Hope (proposed by David Gill).

The following were proposed by the Council as Associates of the Society :—

G. E. Hale, D.Sc., F.R.A.S., Director of the Yerkes Observatory, Williams Bay, Wisconsin, U.S.A. ;

F. R. Helmert, Director of the Geodetic Institute, Potsdam, Germany ;

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F. Küstner, Director of the Observatory, Bonn, Germany ;  
and  
Juan M. Thome, Director of the Argentine National Observ-  
atory, Cordoba, Argentine Republic.

Eighty-two presents were announced as having been received since the last meeting, including, amongst others :—

G. H. Darwin, *The Tides*, presented by the author ; Bordeaux Observatory, *Annales*, tome 8 ; and Munich Observatory, *Neue Annalen*, Band 3, presented by the Observatories.

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*On the Errors of Star Photographs due to Optical Distortion of the Object-glass with which the Photograph is taken.* By H. H. Turner, M.A., F.R.S., Savilian Professor.

1. When the International Conference assembled in 1887 to consider the construction of a chart of the heavens by photography, the most important question which met them at the outset was, With what kind of instrument should the work be done ? Possible instruments were the reflector, the refractor with achromatic object-glass, and the photographic doublet. The achromatism of the first-named, a great advantage in photographic work, was overbalanced by its strictly limited field, and certain inconveniences of working ; the large field of the photographic doublet was regarded with suspicion, suggesting possibilities of complex optical distortion ; and the simple photographic refractor was chosen. We have learnt a good deal more about stellar photography since 1887 ; and I would now venture the opinion that, though the choice of the simple refractor has been attended with many advantages, especially in the taking, measurement, and reduction of the “Catalogue” plates, the photographic doublet is the proper instrument for *charting* purposes. The fears about optical distortion are to a large extent groundless, as the present paper will show ; and the advantages of getting a large field are too obvious to need explanation. In this opinion I am, of course, only following at a respectful distance Professor E. C. Pickering, who urged the claims of the doublet on the Conference in 1887, and who has continued to work with various forms of the doublet ever since. But I have not seen published any attempt to show that the optical distortion of the doublet is small, and though the present investigation leaves much to be desired, it will to some extent fill this gap.